

Underfrequency Load Shedding Standard Drafting Team Meeting

July 16, 2007 — 2 p.m.–5 p.m. Eastern Time

WebEx and Conference Call Information:

Consortium conference number: 1-732-694-2061

Conference code: 1208071607

WebEx Meeting number: 716 431 815

WebEx Meeting password: standards

Agenda

1) Administrative

a) Roll Call

David Taylor will lead the welcome of the standard drafting team members for Project 2007-01 Underfrequency Load Shedding and guests (see NERC UFLS Roster — **Attachment 1a**).

- Dana Cabbell – Southern California Edison Co.
- Paul Attaway – Georgia Transmission Corporation
- Brian Bartos – Banders Electric Cooperative
- Larry E. Brusseau – Midwest Reliability Organization
- Jonathan Glidewell – Southern Company Transmission Company
- Geral Keenan – Bonneville Power Administration
- Donal Kidney – Northeast Power Coordinating Council, Inc.
- Robert W. Millard – ReliabilityFirst Corporation
- Steven Myers – Electric Reliability Council of Texas, Inc.
- Mak Nagle – Southwest Power Pool
- Robert J. O'Keefe – American Electric Power
- Arthur Vierling – National Grid
- Robert Williams – Florida Municipal Power Agency
- Richard Young – American Transmission Company, LLC
- Mohsen Zamzam – Consolidated Edison Co. of New York
- David Taylor – North American Electric Reliability Corporation

Each team member is asked to verify the information on the UFLS roster and notify David Taylor via e-mail of any corrections that should be made.

b) NERC Antitrust Compliance Guidelines

David Taylor will review the NERC Antitrust Compliance Guidelines provided in **Attachment 1b**. It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition. It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

2) Action Items

Dana Cabbell will review the actions generated during the June 20–22 meeting of the standard drafting team for Project 2007-01 UFLS:

Action Items	Status:	Assigned To:
Develop a strawman for PRC-0xx-1 based on the issues list and draft PRC-0xx-1 developed at the June 20–22 meeting of the drafting team.	NEW	Rob O’Keefe
Develop a draft pro forma regional standard.	NEW	Bob Millard and Bob Williams
Establish additional conference call and face-to-face meetings for the SDT for Project 2007-01 UFLS.	NEW	Dave Taylor
Provide an outline of what the technical reports to be provided at the August meeting should contain.	NEW	Mohsen Zamzam
Each person that presented the regional UFLS program at the June 20–22 meeting of the SDT needs to find a person to present the technical UFLS report at the August 15–17 SDT meeting in Austin and provide an electronic copy of the technical report to the team. (The technical reports are not to be posted on the NERC website and not be distributed outside the UFLSDT distribution list.)	NEW	Steve Myers, Bob Williams, Larry Brusseau, Mohsen Zamzam, Bob Millard, Jonathan Glidewell, Mak Nagle, and Dana Cabbell
Schedule a meeting with FERC (Dana to participate via conference call) to discuss plans of SDT to develop continent-wide standard and pro-forma regional standard.	NEW	Dave Taylor
Communicate breakdown of responsibility between Projects 2007-01, 08, and 09 to NERC staff.	NEW	Dave Taylor

3) Standard Drafting Team Objectives

David Taylor will review the schedule for Project 2007-01 UFLS (**Attachment 3**).

4) Strawman for PRC-0xx-1

Dana Cabbell will lead a discussion on the strawman for PRC-0xx-1 Underfrequency Load Shedding drafted by Rob O’Keefe based on discussions held at the June 20-22 meeting of the standard drafting team (**Attachment 4**).

Notes from Rob:

NERC UFLS SDT:

Please see the attached. It is separate from our beginning document at the meeting because I didn't want to mess with formatting. I figure Dave can copy these into the formatted document as they are discussed (thank you Dave!). I also tried to cover in some way or another all Dana's list of items into the attached.

With regard to how the UFLS schemes are set, I thought I would try to link requirements more directly to reliability principles.

Allow me to explain...

The total percent load clearly needs to be staged to avoid the frequency overshooting you could get by dumping it all at once. However, if the relay and breaker time delays are too long, or the Hz intervals between steps are too small, you defeat that purpose. These considerations then set an upper limit on step or block size that may be defined in terms of permissible overshoot, and impose a constraint in two variables: time delay and Hz interval, to ensure that each step has a chance to stop declining frequency before the next step gets activated.

Generator UF tripping sets a lower Hz bound for the schemes. The reliability goal would favor as large a time margin as possible between completion of UFLS operations and beginning of generator UF tripping to allow room for manual intervention to restore frequency should it remain low. An upper Hz bound may be necessary for uniformity. I left that out for now as I don't see a connection to any reliability need.

Note: a total on percent load seems a rather arbitrary choice in most areas. How much of a load-generation imbalance do you want to cover? For reliability, more is better, but I don't see any particular reason for increasing that above the 25-30 percent level now in service across most regions.

On islands...

Imposing requirements on probable islands beyond the basic UFLS scheme is desirable because islands are far the most likely situation to result in severe under-frequency conditions. However, I put the following argument forward against imposing any continent-wide requirement on islands: The basic UFLS schemes will aid in making any island viable. Beyond that, a high degree of engineering judgement may be needed to determine what might constitute a probable island, identify what conditions and events would cause its formation, determine the range of possible load-generation imbalance, decide whether it is worthwhile to make it viable, and if so, what more UFLS should be installed to do that. I simply do not think it's practical to try to standardize this level of judgement. Furthermore, in RFC at least, the two probable islands have already been (in one case) or are being assessed to make them viable. There is an incentive to do that already in the absence of a standard.

5) Draft Pro Forma Regional Standard

Dana Cabbell will lead a discussion on the draft pro forma regional standard for underfrequency load shedding drafted by Bob Williams and Bob Millard based on discussions held at the June 20–22 meeting of the standard drafting team (**Attachment 5**).

6) Draft Pro Forma Regional Standard

Dana Cabbell will lead a discussion outlining what the technical reports to be provided at the August meeting should contain.

7) Action Items

Dana Cabbell will review the action items generated during the meeting and confirm assignments.

8) Next Steps

The group will discuss and identify the next steps and establish future meeting dates and locations.

Next meeting:

- August 15–17 — ERCOT Offices, Austin, TX (Tentative)
August 15 — 1–5 p.m. Central Time
August 16 — 8 a.m.–5 p.m. Central Time
August 17 — 8 a.m.–noon Central Time

9) Adjourn